Appendix E

Region IX Laboratory Data Validation Reports

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TABLES

REGION IX LABORATORY DATA VALIDATION REPORTS

All soil and groundwater sample results reported by the EPA Region IX laboratory and Contract Laboratory Program (CLP) laboratory used for the Newmark project underwent full data validation. Data validation was performed by the Environmental Services Assessment Team (ESAT) on all the environmental samples in accordance with the EPA Region IX guidance. The validation process is used to evaluate whether the analytical procedures requested were properly followed, and to assess the quality and useability of the data generated.

This appendix has been designed to provide a description of the quality assurance (QA) samples utilized and a detailed discussion of field and laboratory quality assurance (QA) sample results. This information is organized in the following sections:

- Data validation criteria and the assessment of data quality objectives.
- Detailed discussion of field and laboratory QA sample anomalies.
- Data quality summary
- Individual data validation reports for all samples analyzed by the EPA Region IX and CLP laboratories.

DATA VALIDATION CRITERIA AND THE ASSESSMENT OF DATA QUALITY OBJECTIVES

The data validation process is used to assess holding time requirements, laboratory blank contamination, the possibility of external contamination of the environmental or quality control samples and accuracy and precision of the matrix spike and matrix spike duplicate samples.

Sample holding time requirements apply to all samples. The holding time is defined as the maximum allowable time that can elapse from the time a sample is collected until the sample preparation (extraction/digestion) or analysis is performed in the laboratory. Each analytical method has a specific allowable holding time (See Tables A-9 and A-10).

One focus of the data validation process is to assess accuracy and the precision of the analytical methods and procedures. These are important data quality objectives of the project. Accuracy is determined by evaluating matrix spike recovery limits. A matrix spike is prepared by adding a known concentration of certain organic compounds. The matrix spike recovery must be within the control limits provided in the CLP Statement of Work (SOW). Sample results that fall outside of the quality control limit range are flagged accordingly. Precision of the result is determined by evaluating the recovery results obtained by a duplicate analysis of the matrix spike (matrix spike duplicate). The percent recovery are evaluated by calculating the Relative Percent Difference (RPD) between the two samples. Samples that fall outside the acceptable RPD are flagged accordingly.

Certain analytical methods require surrogate spikes. Surrogates are organic compounds which are similar in chemical behavior to the analytes of interest, but are not normally found in environmental samples.

The results are qualified according to the Environmental Protection Agency (EPA) Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses, 1988 and Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses, 1988. Data results are flagged with the following qualifiers:

U - indicates that the compounds is not detected above concentration listed

J - indicates results are estimated and the data are valid for limited purposes. The results are qualitatively acceptable

R - results are rejected and data are invalid for all purposes.

UJ- a combination of U and J indicates that results are estimated, detected below the contract required quantitation limits (CRQLs)/contract required detection limits (CRDLs) and are valid for limited purposes only.

Field Quality Assurance Samples

To assess the integrity of field sampling techniques, quality assurance samples were collected and analyzed. Field assurance data were evaluated to ensure compliance with Contract Laboratory Program (CLP) protocols. The field quality assurance samples consist of field blanks, trip blanks, equipment decontamination rinsates and field replicates.

Field blanks were prepared by pouring organic-free water into the appropriate number of preserved sample containers while sampling at specific locations during sampling event. Field blanks are used to indicate the presence of external contamination that may have been introduced during the collection of environmental samples at a fixed location. For example, a field blank could assess the level of contamination introduced by contaminated dust or air. One field blank was collected for every 10 environmental samples.

Trip blanks were prepared by pouring organic-free water into the appropriate number of preserved volatile organic analysis (VOA) vials at an off-site location. The trip blanks were stored with the unused sample containers, stored with collected samples, and finally shipped with the environmental VOA water samples. The purpose of the trip blank was to evaluate whether the sample contamination had occurred during sample container storage or sample shipment. One trip blank was included with VOA water sample in each sample shipment.

Equipment decontamination rinsates were prepared by pouring organic-free water through or over a decontamination piece of sampling equipment, then collecting the water in the appropriate sampling containers. It is used to assess the efficiency of decontamination procedures and to check for residual contamination. Most common sources of contamination in the equipment decontamination rinsates are water (tap, distilled, deionized or organic-free waters), organic solvents used in the decontamination process (i.e methanol, hexane) and phthalate compounds which are commonly associated with plastics.

Replicate (duplicate) were collected concurrently with environmental samples to evaluate the environmental variability at a location. The replicate samples were analyzed to assess the degree of precision of the analyses. Field duplicates were collected for each analysis within each matrix were at a frequency of one per ten environmental samples collected. The precision for each set of field duplicate samples analyzed by the Region IX and CLP laboratory was calculated.

Laboratory Quality Control Samples

Laboratory quality assurance data were evaluated to ensure compliance with the CLP protocols. The laboratory quality control samples produced by the laboratory consisted of method blanks, surrogates and matrix spike samples.

Method blanks are organic-free or deionized water which are processed with the environmental samples. Method blanks are used to assess the level of background interference or contamination which exists in the analytical system and which may then lead to the reporting of elevated concentration levels, or false negatives. Ideally, the concentrations of target analytes in the method blank should be below the Contract Required Quantitation Limits (CRQLs) for organics and Contract Required Detection Limits (CRDLs) for inorganics. In practice, some common laboratory solvents and metals are difficult to eliminate to the parts-per-billion (ppb) levels commonly reported in the environmental analyses. For organic analyses, an exception is made for common laboratory contaminants such as methylene chloride, acetone, 2-butanone, toluene, bis(2-ethylhexyl)phthalates and other phthalate compounds. The detection of these compounds in the blank at levels up to 5 times the CRQLs are still considered acceptable. For metals analyses, where the reporting limits are typically near the instrument detection limit (IDL), a concentration twice the IDL is considered acceptable. A method blank is prepared for every 20 or fewer samples processed and analyzed. If contamination is found in the method blank, all associated samples are flagged according to the blank qualification rules.

Surrogates are organic compounds which are similar in chemical behavior to the analytes of interest, but which are not normally found in environmental samples. A spike sample is prepared by adding a known concentration of certain organic compounds. Surrogate spikes differ from matrix spikes in that the chemicals used to spike the sample are not compounds of interest but rather are chemically similar

species. Surrogate spikes are used to determine method accuracy by assessing the percent recovery for the surrogate spike.

Matrix spikes are environmental samples to which a known concentration of analytes of interest are added. The amount, or percent, of the spike compound that is recovered is used to evaluate the effect of a matrix on the accuracy of the analysis. Double volume water and single volume soil environmental samples were collected for this purpose. The results are expressed as percent recovery.

DETAILED DISCUSSION OF FIELD AND LABORATORY QA SAMPLE ANOMALIES

A Sample Delivery Group (SDG) is a group of 20 or fewer samples of the same matrix and analysis. The discussion presented in the following section will summarize only problems associated with the field and laboratory Quality Assurance (QA) samples and their effect on the quality of the data. The discussion will be organized by SDG. The SDG report number is designated by using the first EPA sample number reported in the group.

Field Quality Assurance Samples

The results of field quality assurance samples and the evaluation of laboratory quality assurance procedures are provided below:

Volatile Organic Analysis (VOA)

VOA Field Blank Review

Six field blanks were analyzed for VOAs. Analyte results detected are provided in Table 1.

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Table 1

SUMMARY OF FIELD QA/QC SAMPLES FOR VOLATILE ORGANICS

SDG #	QA/QC Blanks	Sample #	1,1,1-Trichloroethane	Methylene Chloride	Tetrachloroethene	Toluene	Ethylbenzene	Total Xylenes
SY0154	Trip Blk	SY0154	ND	ND	ND	ND	ND	ND
	Field Blk	SY0164	ND	ND	ND	14	2	9
	Field Blk	SY0165	ND	ND	ND	12	1.0	8
	Field Blk	SY0171	ND	0.2	ND	12	1.0	8
SY0173	Trip Blk	SY0173	ND	ND	ND	ND	ND	ND
	Field Blk	SY0177	ND	ND	ND	15	15	7
	Trip Blk	SY0183	ND	ND	ND	ND	ND	ND
	Trip Blk	SY0186	ND	ND	ND	ND	ND	ND
	Trip Blk	SY0193	ND	ND	ND	ND	ND	ND
	Field Blk	SY0189	ND	ND	ND	11	15	7
SY0193	Equip. Rinsate	SY0194	0.3	ND	0.25	0.85	ND	ND
	Trip Blk	SY0197	ND	ND	ND	ND	ND	ND
	Equip. Rinsate	SY0199	0.35	ND	ND	1.05	ND	ND
	Trip Blk	SY0200	ND	ND	ND	0.35	ND	ND
SY0203	Field Blk	SY0205	ND	ND	ND	0.35	ND	ND
	Trip Blk	SY0208	ND	ND	ND	0.35	ND	ND
SY0213 (1)	Field Blk	SY0208	ND	ND	ND	ND	ND	ND
	Trip Blk	SY0220	ND	ND	ND	ND	ND	ND
		SY0221	ND	ND	ND	ND	ND	ND
		SY0225	ND	ND	ND	ND	ND	ND
		SY0225	ND	ND	ND	ND	ND	ND

Note: (1) Soil matrix field QA/QC samples.

SDG SY0154: Toluene, ethylbenzene and total xylenes were found in one field blank (SY0164). Methylene chloride, toluene, ethylbenzene and total xylenes were found in field blanks (SY0165 and SY0171). Methylene chloride, toluene, ethylbenzene and total xylenes were found in one environmental sample (SY0157) at less than CRQL. Toluene, ethylbenzene and total xylenes were not detected in any of the associated environmental samples. Based on the findings, contamination in the field blank was traced to the High Performance Liquid Chromatography (HPLC) organic-free water used for the preparation of the field blanks. All of the data are valid and usable.

SDG SY0173: Toluene, ethylbenzene and total xylenes were found in two field blanks (SY0177 and SY0189). Toluene were found in two environmental samples (SY0184 and SY0185). Since toluene was detected in the field blank, it was concluded that the presence of toluene in the environmental samples was a result of external contamination. Based on the findings, contamination in the field blank was traced to the HPLC organic-free water used for the preparation of the field blanks. All the data are valid and usable.

VOA Trip Blank Review

Thirteen trip blanks were analyzed for VOAs. Analyte results detected in the following SDGs are provided in Table 1.

SDG SY0193: Toluene was found in trip blank SY0200. Toluene was found in two environmental samples (SY0195 and SY0196). These samples were flagged previously due to contamination from the equipment decontamination rinsates. Since the trip blank is prepared in the laboratory and toluene is a commonly laboratory solvent, toluene contamination could have been derived from the laboratory.

VOA Equipment Decontamination Rinsate Review

Two equipment decontamination rinsates were analyzed for VOAs. Analyte results detected in the following SDGs are summarized in Table 1.

SDG SY0193: 1,1,1-Trichloroethane and toluene was found in the equipment blanks SY0194 and SY0199. Tetrachloroethene (PCE) was also found in SY0194. Review of the data revealed that PCE was found at fairly high concentrations in the environmental samples, the presence of PCE in the equipment blank may have been a result of incomplete equipment decontamination. Toluene was found in two environmental samples (SY0195 and SY0196) and one trip blank (SY0200). Since low level concentration was found in the equipment decontamination rinsate, the presence of toluene in the environmental samples mentioned above is probably a result of external contamination. Toluene is a common laboratory contaminant. Toluene for the samples mentioned above were considered estimates and usable for limited purposes only.

Semivolatile Organic Analysis (BNAs)

BNA Equipment Decontamination Rinsate Review

Three equipment decontamination rinsates were analyzed for BNAs. Analyte results detected in the following SDGs are provided in Table 2. Phthalate compounds are commonly associated with plastics.

SDG YK618: Bis(2-ethylhexyl)phthalate was found in the equipment decontamination rinsate (YK619). Bis(2-Ethylhexyl)phthalate was found in four environmental samples (YK620, YK621, YK623 and YK624). The results these samples are considered as nondetected and estimated and the quantitation limits have been increased to 71 μg/L for samples YK620, YK621 and YK0624, according to the blank qualification rule.

SDG YK599: Bis(2-ethylhexyl)phthalate was found in the equipment decontamination rinsate at a concentration of 88 μg/L. Bis(2-ethylhexyl)phthalate was also found in environmental samples YK601, YK602, YK605 and YK608. The results for these samples are considered as nondetected and estimated and the quantitation limits have been increased to 88 μg/L for environmental samples YK601 and YK605, according to the blank qualification rules. The data result for bis(2-hexylbenzyl)phthalate are usable for limited purposes only.

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Table 2

SUMMARY OF FIELD QA/QC FOR SEMIVOLATILE ORGANICS

QA/QC Blanks	SDG #	Sample #	bis(2-ethylhexyl) phthalate (μg/L)
Equipment Decontamination Rinsate	SY618	YK619	71
Equipment Decontamination Rinsate	SY599	YK606	88
Equipment Decontamination Rinsate	SY0193	YK607	ND

Total Metals Analysis

Total Metals Equipment Decontamination Rinsate Review

Three equipment decontamination rinsates were analyzed for total metals. Analyte results detected in the following SDGs are provided in Table 3.

SDG MYH647: Aluminum (Al), Lead (Pb), Magnesium (Mg), Manganese (Mn), Potassium (K), and Sodium (Na) were found in sample MYH654. Review of the associated environmental samples also revealed high concentrations of these metals. There is a possibility that decontamination of the sampling equipment was not complete. Al, and Pb were also detected in equipment blank MYH655. These values are below the CRQL.

SDG MYH666: Cr and Pb were found in equipment blank MYH667. These values are below the CRDL. The contamination might be derived from the laboratory because the method blank had Cr detected at levels near those found in MYH667. The contamination could have resulted from laboratory activities.

<u>Laboratory Quality Assurance Samples</u>

The results of laboratory quality assurance samples and the evaluation of laboratory quality assurance procedures are provided.

Only problems associated with the Quality Assurance/Quality Control (QA/QC) samples and the implications for the validation of the data are discussed below. The problems associated with each SDG are summarized in Table 4.

Volatile Organic Analysis (VOA)

VOA Method Blank Review

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Table 3

SUMMARY OF FIELD QA/QC SAMPLES FOR TOTAL METALS

QA/QC Blanks	SDG #	Sample #	Al	Ca	Cr	Fe	Pb	Mg	K	Na	Zn
Equipment Decontamination Rinsate	MYH647	MYH654	74.5	8770[1]	ND	203[1]	1.5	2100	830	3230	30.7[1]
Equipment Decontamination Rinsate	MYH647	MYH655	61.7	ND	ND	ND	1.4	ND	ND	ND	ND
Equipment Decontamination Rinsate	MYH666	MYH667	ND	ND	3.9[1]	ND	1.3	ND	ND	ND	ND

Note: [1] Concentration detected greater than Contract Required Detection Limit (CRDL).

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Table 4

SUMMARY OF LABORATORY QA/QC SAMPLES

Parameters	Matrix	SDG #	Sample #	Analysis	Problems	Data Usability
Volatile Organic Analysis	Water	SY0154	All samples and the method blank	2-Hexanone	RRFs below the 0.05 QC limits due to low RRF in the initial and continuing calibrations.	Quantitation limit for 2-Hexanone is considered as an estimate and usable for limited purposes only.
		SY0173	SY0184-SY0192 VBlk #3	2-Hexanone	Low RRF in the initial and continuing calibration below the 0.05 QC limit.	False negative might exist with ND results.
			SY0184-SY0192 VBlk #3	Chloroethane	% difference (32.2%) exceeds the advisory limits (25%).	The data results for chloroethane are considered an estimate and usable for limited purposes only.
		SY0193	All samples and method blanks	2-Hexanone	Average RRFs in the initial and continuing calibrations were found below the 0.05 QC limit.	The results are considered as estimates and usable for limited purposes only. Since the results are non-detected, false negatives may exist.
		SY0203	SY0203	Toluene	Found in trip blank (SY205) at 0.3 µg/L	Toluene in sample SY203 is considered as an estimate and usable for limited purposes only.
			All samples	2-Hexanone	Average RRFs in the initial and continuing calibrations were found below the 0.05 QC limit.	Quantitation limits are considered as estimates and usable for limited purposes only.
Semivolatile Organics (BNAs)	Water	YK618	YK618 through YK622 method blanks WBlk1, WBlk2 YK623, YK624, WBlk3	2,4-Dinitro-phenol 4,6-Dinitro-2-methylphenol	Average RRF in the initial calibration was below the 0.05 QC limit.	The quantitation limits for these analytes are considered as estimates and usable for limited purposes only.
			All samples and method blanks	4,6-Dinitro-2-methylphenol	%D (33% 35%) exceeds the advisory limits (25%).	Same as above.

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Table 4 (Cont'd.)

SUMMARY OF LABORATORY QA/QC SAMPLES

Parameters	Matrix	SDG #	Sample #	Analysis	Problems	Data Usability
Semivolatile Organics (BNAs) (Cont'd.)	Water (Cont'd.)	YK629	YK628, YK629 and YK634, WBlk1	Bis-(2-ethylhexyl) phthalate	Found in the method blank at 4.0 µg/L.	The results for these analytes are considered as estimates and usable only for limited purposes only.
Semivolatile Organics (BNAs)	Soil	YK595	YK597	Butylbenzyl-phthalate bis (2-ethylhexyl) phthalate	These compounds are common lab contaminants and were not found in the method blank.	The results are considered non-detected and estimates.
			All samples	2,4-Di-nitrophenol & 4,6-dinitro-2-methyl-phenol & method blanks	RRF was below the 0.05 QC limit.	The results for these analytes are non-detect and false negatives may exist.
		YK600	YK602, YK603, YK612	Di-n-butyl-phthalate	Found in these samples but not found in lab method blank.	Historically found as a common lab contaminant. Results were considered estimates and usable for limited purposes only.
		YK613	YK614	Butylbenzyl-phthalate	Found in this sample but not found in the method blank.	Historically found as a common lab contaminant. Results were considered estimates and usable for limited purposes only.
Pesticides/PCBs	Water	YK618	YK622, YK623, YK624	Dieldrin & Methoxychlor	%D for the continuing calibration standards exceeds the 15% QC limit.	Analytes are considered estimates and usable for limited purposes only.

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Table 4 (Cont'd.)

SUMMARY OF LABORATORY QA/QC SAMPLES

Parameters	Matrix	SDG #	Sample #	Analysis	Problems	Data Usability
Pesticides/PCBs (Cont'd.)	Water (Cont'd.)	YK599	YK604, YK605, YK606, Method Blk10	Endrin	Endrin breakdown exceeded the <20% QC limit.	The quantitation limits in the samples are considered questionable and false negative might exist. The data results are considered estimates.
			YK604MS	Endrin	No endrin was recovered in the MS.	Indicative of the endrin breakdown problem noted above. The data results are considered estimates.
Pesticides/PCBs	Soil	YK595	No sample affected.	4,4'-DDT	% RSD exceeded <10% QC limit for 4,4'-DDT in the evaluation check for linearity.	Data are not affected because no target analytes were detected.
			No sample affected.	4,4'-DDT/Endrin	Endrin breakdown exceeded the <20% QC limit.	Data are not affected because endrin breakdown in the primary column was below the <20% QC limit.
Total Metals	Water	MYH647	All samples and method blanks	Mercury	Insufficient # of calibration standards. Zero % recovery of the CRA std. Zero % recovery indicates a problem with the analysis near the detection limit.	The detection limits are rejected and unusable for any purpose due to calibration problems.
			All samples and method blanks	Aluminum	Matrix spike recovery in QC sample # MYH652 did not meet the 75-125% criteria for accuracy.	Data results are considered usable for limited purposes and the results above IDL are quantitatively questionable.

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Table 4 (Cont'd.)

SUMMARY OF LABORATORY QA/QC SAMPLES

Parameters	Matrix	SDG #	Sample #	Analysis	Problems	Data Usability
Total Metals (Cont'd.)	Water (Cont'd.)	MYH647 (Cont'd.)	HYH647, MYH649, MYH653, MYH654 & MYH656	Lead	Post-digest analytical spike did not meet the 85-115% criteria for accuracy.	The data results are considered estimates and usable for limited purposes only. The results may be biased low and false negatives may exist.
					Analytical spike was not performed in the analysis of the lab duplicate sample for As, Pb, Se and Te.	This will not affect the results.
		MYH666	MYH671, MYH672	Aluminum	The matrix spike recovery for QC sample MYH672 did not meet 75-125% criteria for accuracy. Post-digest recovery is also low.	The detection limit is rejected and considered unusable because of low MS recovery. False negatives may exist.
			MYH666 through MYH670	Lead	Lab inclusive duplicates did not meet the ±20% RPD.	Results are considered estimates and usable for limited purposes only.
			All samples and method blanks	Mercury	Insufficient # of calibration standards.	The results are considered estimates, quantitatively questionable and usable for limited purposes only.
		MYJ443	All samples	Lead	Matrix spike recovery in MYJ443 (QC sample) did not meet the 75-125% criteria for accuracy.	The results are considered usable for limited purposes only.

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Table 4 (Cont'd.)

SUMMARY OF LABORATORY QA/QC SAMPLES

Parameters	Matrix	SDG #	Sample #	Analysis	Problems	Data Usability
Total Metals (Cont'd.)	Water (Cont'd.)	MYJ443 (Cont'd.)	All samples	Lead	Post-spike recovery in MYJ453 (QC sample) did not meet the 85-115% criteria for accuracy.	The results are considered usable for limited purposes only.
			MYJ443 MYJ446 MYJ447 MYJ450 MYJ451 MYJ453	Selenium		
Total Metals	Soil	MYH643	All samples and lab blanks	Mercury	Insufficient # of calibration standards.	The results in all of the samples and lab blanks are considered usable for limited purposes only.
			All samples	Aluminum and Iron	%D of the ICP serial dilution analytes exceeded <10% QC criteria.	The results are considered qualitatively questionable and usable for limited purposes only.
			MYH643	Arsenic	Post-digest spike recovery did not meet the 85-115% criteria for accuracy.	The results are considered estimates and usable for limited purposes only.
			MYH643, MYH645 and the lab blanks	Selenium	Post-digest spike recovery did not meet the 85-115% criteria for accuracy.	The results are considered estimates and usable for limited purposes only.
		MYH648	All samples and lab blanks	Mercury	Insufficient # of calibration standards. 0% recovery of the CRA standards.	The results in all of the samples are rejected and unusable for any purpose.

Appendix E

Table 4 (Cont'd.)

SUMMARY OF LABORATORY QA/QC SAMPLES

Parameters	Matrix	SDG #	Sample #	Analysis	Problems	Data Usability
Total Metal (Cont'd.)	Soil (Cont'd.)	MYH648 (Cont'd.)	All samples	Arsenic	Matrix spike recovery in the QC sample MYH659 did not meet the 75-125% criteria for accuracy.	The data results are considered estimates, quantitatively questionable and usable for limited purposes only.
			MYH648, MYH650, MYH651 & MYH657 through MYH659	Arsenic	Post-digest spike in the GFAA analysis for these samples did not meet the 85-115% criteria for accuracy.	The results reported may be based low and false negatives may exist.
			Method blank	Lead	Post-digest spike in the GFAA analysis did not meet the 85-115% criteria for accuracy.	The results for these analytes are considered usable for limited purposes only.
			MYH648	Thalium	Post-digest spike in the GFAA analysis did not meet the 85-115% criteria for accuracy.	The results for these analytes are considered usable for limited purposes only.
			MYH660	Arsenic	Correlation coeff. for MSA did not meet 0.995 criteria for accuracy.	The reported results are considered quantitatively questionable and usable for limited purposes only.
			MYH658	Iron	The measured conc. of the prepared sample was greater than the ICP linear range.	The reported results are considered quantitatively questionable and usable for limited purposes only.
		MYH661	All samples and lab blanks	Mercury	Insufficient # of calibration standards.	The results of all the samples are estimates and usable for limited purposes only.

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Table 4 (Cont'd.)

SUMMARY OF LABORATORY QA/QC SAMPLES

Parameters	Matrix	SDG #	Sample #	Analysis	Problems	Data Usability
Total Metals (Cont'd.)	Soil (Cont'd.)	MYH661 (Cont'd.)	All samples	Antimony	Matrix spike recovery in MYH661 (QC sample) did not meet the 75-125% criteria for accuracy.	The results are considered usable for limited purposes only.
			MYH662 and MYH663	Selenium	Post-digest spike in the GFAA analysis did not meet the 85-115% criteria for accuracy.	The results are considered usable for limited purposes only.

Note: RRF = Relative Response Factor

Note:

Organic Analysis

Relative Response Factor (RRF) = area response of the compound against concentration for each compound and internal standard. RRF is calculated as follows:

$$RRF = \frac{A_x}{A_{is}} \times \frac{C_{is}}{C_x}$$

Where,

A_x = Area of the characteristic ion for the compound to be measured.
A_{is} = Area of the characteristic ion for the specific internal standard.
C_{is} = Concentration of the internal standard.
C_x = Concentration of the compound to be measured.

Average Response Factor (RRF) = the sum of relative response factor for each standard in the calibration curve divided by the number of the standard used in the calibration.

$$\overline{RRF} = \frac{RRF_1 + RRF_2 + \ldots RRF_n}{n}$$

% Relative Standard Deviation (RSD) is the ratio of the standard deviation to the mean multiplied by 100.

$$\%RSD = \frac{Standard\ Deviation}{mean} \times 100$$

Where,

$$Standard\ Deviation = \left| \frac{\sum_{i=1}^{N} (x_i - \overline{x}^2)}{n-1} \right|^{\frac{1}{2}}$$

Where,

x_i	=	each individual value used to calculate the mean.
$\overline{x}$	=	the mean of n values.
n	=	the total number of values

% Difference (D) is the difference between daily relative response factor compared to the average relative response factor from the initial curve.

$$\%D = \frac{\overline{RRF} - RF}{RRF} \times 100$$

Inorganic Analysis (Total Metals)

ICP Serial Dilution Analysis:

The relative percent differences (RPD) for each component are calculated as follows:

$$RPD = \frac{|S - D|}{(S + D) / 2} \times 100$$

Where,

RPD	=	Relative Percent Difference
S	=	First Sample Value (original)
D	=	Second Sample Value (duplicate)

Percent Difference:

$$\%\,Difference = \frac{|I - S|}{I} \times 100$$

Where,

I	=	Initial Sample Result
S	=	Serial Dilution Result (Instrument Reading x 5)

Method of Standard Addition (MSA)

Addition of analytical spikes in the sample prior to analysis by adding a known quantity of the analyte to an aliquot of the digested sample.

Spikes are prepared such that:

a) Spike 1 is approximately 50% of the sample concentration.
b) Spike 2 is approximately 100% of the sample concentration.
c) Spike 3 is approximately 150% of the sample concentration.

Data from MSA calculations must be within the linear range as determined by the calibration curve generated at the beginning of the analytical run.

The correlation coefficient (r) must be greater than or equal to 0.995.

Nineteen method blanks were analyzed for VOAs. All method blanks associated with the environmental and quality assurance samples were analyte-free (non-contaminated) except for five samples. All accuracy, precision, and surrogates spike recovery were within control limits established for volatile organic compounds. Environmental and quality assurance analytical results for volatile organic compounds are considered valid and usable.

SDG SY0154: In all samples and method blanks (VBlk1 and VBlk2), 2-Hexanone was flagged UJ due to low Relative Response Factors (RRF) in the initial and continuing calibrations. RRFs below the 0.050 QC limits were observed for 2-hexanone in the initial calibration performed March 2, 1992 and in the continuing calibration performed March 18, 1992. These deviations did not affect the quality of the results, except for the 2-hexanone.

SDG SY0173: In samples SY0184 through SY0192 and method blank VBlk3, 2-Hexanone was flagged UJ due to low RRF in the initial and continuing calibrations. An average RRF of 0.043 was observed for 2-hexanone in the initial calibration performed March 2, 1992 and an RRF of 0.046 was observed in the continuing calibration performed March 31, 1992. These RRFs are below the 0.05 QC limit. This deviations did not affect the quality of the results, except for the 2-hexanone.

Chloroethane in sample numbers SY0184 though SY0192 and method blank VBKl3 were flagged J, due to a large percent difference (%D) in the continuing calibration. A 32.3 %D, which exceeds the $< \pm 25\%$ advisory limit, was observed for chloroethane in the continuing calibration performed March 31, 1992. This deviation is not expected to affect the quality of the results, except for chloroethane. False negatives may exist for chloroethane non-detections. The results for chloroethane are considered nondetected, estimated and usable for limited purposes only.

SDG SY0203: In all samples and method blanks (VBLK1 and VBLK2), 2-Hexanone was flagged UJ due to low RRF in the initial and continuing calibrations. Average RRF of 0.041 and 0.044 were observed for 2-hexanone in the initial calibration performed April 9 and 10, 1992, respectively. RRFs of 0.039 and 0.047 were observed for 2-hexanone in the continuing calibration performed April 13 and April 22, 1992, respectively. These RRFs are below the 0.05 QC limit. The results for chloroethane are considered nondetected and estimated and usable for limited purposes only.

Semivolatile Organic Analysis (BNA)

BNA Method Blank Review

Sixteen method blanks were analyzed for BNAs. All method blanks associated with the environmental and quality assurance samples were analyte-free (non-contaminated) except four method blank samples. All matrix spike samples were within the acceptable control limits.

SDG YK618: An average RRF of 0.040 was observed for 2,4-dinitrophenol in the initial calibration performed on March 4, 1992. RRFs of 0.032 and 0.042 were observed for 2,4-dinitrophenol and 4,6-dinitro-2-methylphenol, respectively in the continuing calibration performed on March 6, 1992. These values are below the 0.05 QC limit. The quantification limits for both 2,4-dinitrophenol in sample numbers YK618 through YK622 and method blanks WBLK1 and WBLK2, 4,6-dinitro-2-methylphenol in YK623, YK624 and method blank WBLK3 are considered as estimates and usable for limited purposes only due to low RRFs in the initial and continuing calibrations.

The %D of 33% and 35% were observed for 4,6-dinitro-2-methylphenol in the continuing calibrations performed on April 17 and March 6, 1992, respectively. These values exceeded the $< \pm 25$ QC limit. Since 2,4-dinitro-2-methylphenol was not detected in any samples or method blanks, the quantification limit is considered as an estimate and the data for 2,4-dinitro-2-methylphenol are usable for limited purposes only.

SDG YK629: Bis(2-ethylhexyl)phthalate was found in samples YK628, YK629, YK634 and in method blank WBlk (6/29/92). Although bis(2-ethylhexyl)phthalate was not detected in the method blank (6/30/92), which is the blank associated with samples YK628 and YK634, historically it has been found as a common laboratory contaminant associated with plastics. It is believed that the bis(2-ethylhexyl)phthalate detected in samples YK628 and YK634 is a laboratory artifact. The results for the samples listed above are considered as non-detected and estimated and were flagged UJ.

SDG YK595: Butylbenzylphthalate and bis(2-ethylhexyl)phthalate for sample YK597 are considered estimates and usable for limited purposes only. Although they were not detected in the method blanks, these compounds were flagged UJ because they have historically been found to be common laboratory contaminants. It is believed that butylbenzylphthalate and bis(2-ethylhexyl)phthalate found in sample YK597 are laboratory artifacts.

An average RRF below the 0.05 QC limit was observed for 2,4-dinitrophenol in the initial calibration performed on March 12, 1992. RRFs below the 0.05 QC limit were observed for 2,4-dinitrophenol and 4,6-dinitro-2-methylphenol in the continuing calibration performed on March 13, 1992. These deviations did not affect the quality of data results, except for the analytes mentioned above.

SDG YK600: Di-n-butylphthalate for sample YK602, YK603 and YK612 are considered estimates and usable for limited purposes only. Although it was not detected in the method blanks. this compound was flagged UJ because it is historically found as a common laboratory contaminants. It is believed that di-n-butylphthalate found in samples mentioned above are laboratory artifacts.

SDG YK613: Butylbenzylphthalate was detected in sample YK614. Although not detected in the method blank, butylbenzylphthalate has historically been found as a common laboratory contaminant. It is believed that butylbenzylphthalate found in the sample is a laboratory artifact. The result of this sample is considered as nondetected and estimated, was flagged UJ, and the detection limit was increased according to the blank qualification rules.

Pesticide/Polychlorinated Biphenyls Analysis (Pesticide/PCBs)

Pesticide/PCB Method Blank Review

Sixteen method blanks were analyzed for pesticide/PCBs. All method blanks associated with the environmental and quality assurance samples were analyte-free (non-contaminated). All matrix spikes sample were within the acceptable control limits. All accuracy, precision, and surrogate spike recovery values were within control limits established for pesticide/PCBs compounds. All environmental and

quality assurance analytical results for pesticide/PCBs are considered valid and usable except those that are discussed below.

SDG YK618: Dieldrin and methoxychlor in sample YK622, YK623 and YK624 were flagged J due to calibration problems. The %D of 20.8% for dieldrin and 43.2% for methoxychlor was found in the continuing calibration performed March 21, 1992. These exceed the $< \pm 15\%$ QC limit. The quantitation limits for both analytes are considered as estimates and are usable for limited purposes only. Since all the environmental samples are nondetected, the data are valid and usable, except for dieldrin and methoxychlor.

SDG YK599: No endrin was recovered in matrix spike sample YK604MS, but this did not affect the data because there was no pesticide/PCBs found in the samples. Also, endrin breakdown problems were observed which exceeded the $< \pm 20\%$ QC limit.

SDG YK595: 4,4'-DDT Percent Relative Standard Difference (RSD) exceeded the $< \pm 10\%$ QC limit in the evaluation check for linearity on the confirmation column of the calibration performed March 14, 1992. Since no target analytes were detected, the data are not affected.

Endrin breakdown for 4-4'DDT/Endrin exceeded the $< \pm 20\%$ QC limit in the evaluation check confirmation column performed on March 15, 1992. The data was not affected since endrin in the primary column was below the $< \pm 20\%$ QC limit.

Total Petroleum Hydrocarbons Analysis (TPH)

TPH Method Blank Review

Nine method blanks for TPH-gasoline and five for TPH-diesel were analyzed. All method blanks associated with the environmental and quality assurance samples were analyte-free (non-contaminated). All matrix spike samples were within the acceptable control limits. All data results are valid and usable.

SDG SY0153: One sample (SY0153) exceeded the holding time by 1 day. This did not affect the data.

Total Metals Analysis

Total Metals Method Blank Review

Seven method blanks were analyzed for total metals. Only one of the method blanks did not show some form of blank contamination. It is common that blank contamination occur in the method blanks. In the case of unusual blank results, the application of the blank qualification rule depends on the circumstances and origin of the blank. Sample results greater than IDL but less than 5 times the concentration detected in the method blanks were qualified U (nondetected). Six sets of matrix spikes samples were analyzed. Only one set of the matrix spike samples did not have any problems. All QA/QC parameters, other than those discussed below, have been met and are considered acceptable. All of the other results are valid and usable for all purposes except those that are discussed below.

SDG MYH647: The method blank had arsenic (As) contamination detected at less than CRDL. The method blank and all the environmental samples were flagged according to the blank qualification rule.

Data results for mercury (Hg) in all of the samples and method blanks were rejected and unusable due to calibration problems. An insufficient number of calibration standards lower than 5.0 μg/L was used in the calibration of Hg by the automated cold vapor technique. The CLP SOW requires eight standards be used for calibration ranging from 0.0 to 15.0 μg/L. Two Hg standards (0.2 and 0.5 μg/L) were not used. This deficiency is exemplified by the zero percent recovery of the CRDL standard for Atomic Absorption spectrophotometer (AA) analysis.

The matrix spike recovery (62.5%) results for aluminum (Al) in the QC sample number MYH652 did not meet the 75-125% criteria for accuracy. The results reported for Al in all environmental samples may be biased low.

The post-digest analytical spike recovery results for lead (Pb) did not meet the 85-115% criteria for accuracy. The Pb data results for MYH647, MYH649, MYH653, MYH654, and MYH656 were considered estimates and are flagged J. An analytical spike was not performed in the analysis of the laboratory duplicate sample for Ar, Pb, Se,and Tl. This analytical deficiency did not affect the results.

SDG MYH666: Two method blanks were analyzed. Method blank (#1) had Cr and Hg contamination at levels exceeding the CRDL and method blank (#2) had no contamination detected. The method blank and all the environmental samples were flagged according to the blank qualification rule.

The matrix spike recovery (28.4%) results for aluminum (Al) in QC sample number MYH672 did not meet the 75-125% criteria for accuracy. The results reported for Al in all environmental samples may be biased low. The detection limit for Al in the environmental sample MYH671 was rejected and was flagged R because of the low matrix spike recovery percentage.

The laboratory duplicate results for Al and Pb did not meet the $\pm$20% RPD and CRDL criteria for precision. Since Al had been previously qualified, only Pb in environmental sample MYH672 was qualified J. The results for Pb in the environmental samples MYH666 through MYH670 are considered usable for limited purposes only. The inconsistency of the results between the laboratory duplicates may be due to high levels of solids in the sample, poor sampling or analytical laboratory technique, or method defects.

Data results for Hg in all of the samples and method blanks were considered and usable for limited purposes only due to calibration problems. An insufficient number of calibration standards lower than 5.0 μg/L were used in the calibration of Hg by the automated cold vapor technique. The CLP SOW requires eight standards be used for calibration ranging from 0.0 to 15.0 μg/L. Two Hg standards (0.2 and 0.5 μg/L) were not used. The results for Hg in all of the environmental samples and method blanks were flagged J.

SDG MYJ443: The method blank had Ca, Fe, and Tl contamination detected at levels exceeding the CRDL. The method blanks and all the environmental samples were flagged according to the blank qualification rule.

The matrix spike recovery (73.5%) results for Pb in the QC sample number MYJ453 did not meet the 75-125% criteria for accuracy. The Pb results reported for all the environmental samples may be biased low. The Pb results are estimated and are considered usable for limited purposes only.

The post-digest analytical spike recovery results for Pb, Se and Tl did not meet the 85-115% criteria for accuracy. The Pb data results in the environmental samples MYJ444 through MYJ453, Se in MYJ443, MYJ446, MYJ447, MYJ450, MYJ451, and MYJ453, and Tl in MYJ443 were considered estimates and were flagged J. The post-digestion spike recovery results for Pb, Se, and Tl in the environmental samples listed above show an analytical deficiency. The results reported for Se and Tl in MYJ443 are considered quantitatively uncertain and may be biased low. The detection limits reported for lead in all of the environmental samples, and for Se in environmental samples MYJ446, MYJ457, MYH450, MYJ451, and MYJ453, may be biased low and false negatives may exist.

SDG MYH643: The method blank had Mg contamination detected at levels greater than the CRDL. The method blank and all the environmental samples were flagged according to the blank qualification rule.

Data results for Hg in all of the samples and method blanks were considered usable for limited purposes only due to calibration problems. An insufficient number of calibration standards lower than 5.0 μg/L was used in the calibration of Hg by the automated cold vapor technique. The CLP SOW requires eight standards be used for calibration ranging from 0.0 to 15.0 μg/L. Two Hg standards (0.2 and 0.5 μg/L) were not used. The results for Hg in all of the environmental samples and method blank were flagged J.

The %D of the Inductively Coupled Plasma (ICP) serial dilution analysis of environmental sample MYH646 did not meet the $< 10\%$ criteria for Al and Fe analyses. The results reported for Al and Fe in all environmental samples are considered quantitatively questionable. Chemical and physical interferences may exist due to the sample matrix. The results for Al and Fe are considered usable for limited purposes only.

The post-digest analytical spike recovery results for As and Fe did not meet the 85-115% criteria for accuracy. The environmental sample Pb data results in MYH643, Se in MYJ443, MYJ446, MYJ447, MYJ450, MYJ451, and MYJ453, Tl in MYH643, MYH645 and the method blank were considered estimates and were flagged J. The results reported for As in environmental sample MYH643 and Se in MYH443, MYH645 and method blank may be biased low and false negatives may exist.

SDG MYH648: The method blank had Copper (Cu) contamination detected at levels exceeding the CRDL. The method blank was flagged J according the blank qualification rule. All the environmental samples have Cu detected greater than the CRDL, hence no flag was necessary.

Data results for mercury (Hg) in all of the samples and method blanks were rejected and unusable due to calibration problems. An insufficient number of calibration standards lower than 5.0 μg/L was used in the calibration of Hg by the automated cold vapor technique. The CLP SOW requires eight standards be used for calibration ranging from 0.0 to 15.0 μg/L. Two Hg standards (0.2 and 0.5 μg/L) were not used. This deficiency is exemplified by the zero percent recovery of the standard. The detection limits in all environmental samples and the method blank are rejected due to these analytical deficiencies.

SDG MYH661: The method blank had Al and Hg contamination detected at levels exceeding the CRDL. The method blank and all the environmental samples were flagged according to the blank qualification rule.

Data results for mercury (Hg) in all of the samples and method blank were considered usable for limited purposes only due to calibration problems. An insufficient number of calibration standards lower than 5.0 μg/L was used in the calibration of Hg by the automated cold vapor technique. The CLP SOW requires eight standards be used for calibration ranging from 0.0 to 15.0 μg/L. Two Hg standards (0.2 and 0.5) were not used. The results for Hg in all of the environmental samples and method blank were flagged J.

The matrix spike recovery (54.3%) results for antimony (Sb) in QC sample MYJ453 did not meet the 75-125% criteria for accuracy. The Sb results reported for all the environmental samples are considered quantitatively questionable and may be biased low. The Sb results are estimated and are considered usable for limited purposes only.

The post-digest analytical spike recovery results for Se did not meet the 85-115% criteria for accuracy. The Se data results in environmental samples MYH662 and MYH663 were considered estimates and are flagged J. The results reported may be biased low and false negatives may exist.

DATA QUALITY SUMMARY

The holding times for all the samples were met except for one environmental sample analyzed for pesticides/PCBs. Since holding time for this sample was exceeded by only one day, the data results were not adversely affected.

Surrogates are added to samples to monitor the effect of the matrix on the accuracy of the analysis. The surrogate percent recovery for all the organic analysis were within the control limits specified in the CLP SOW. Sample results that fall outside of the quality control limit range are flagged accordingly.

Since duplicate data results analyzed by both laboratories did not show any detections for pesticides/PCBs, and TPH gas and diesel, precisions were not calculated. Total metals had two sets of duplicate samples. Duplicate results for total metals indicated fourteen detections of which two detections were outside the acceptable criteria of 20%. The precision values of the remaining twelve detections range from 0.22 to 6.6 with a mean of 2.16. For BNAs, one detection was observed with a precision value of 4.9 (see Table 5).

Field and laboratory quality assurance data were assessed for compliance with established quality assurance standards. Detectable concentrations of target compounds were found in field quality assurance samples and discrepancies were noted in the laboratory quality assurance samples. However, a thorough review of these data indicates that these quality assurance discrepancies do not adversely affect the quality or validity of the environmental and quality assurance sample results presented in this report. All valid analytical data generated are usable for all purposes.

Appendix E

Table 5

SUMMARY OF PRECISION FOR DUPLICATE SAMPLES

Parameter	Location	Sample #	Matrix	Analyte	D_1	D_2	Precision
Volatile Organic Analysis	MW01G	SY0215 SY0216	Water	No analyte detected	--	--	--
	MW02B	SY0201 SY0202	Water	1,1-DCA Cis-1,2-DCE TCE PCE	0.6 2.0 3.0 16.0	0.6 2.0 3.0 16.0	0 0 0 0
	MW03	SY0195 SY0196	Water	No analyte detected	--	--	--
	MW07B	SY0223 SY0224	Water	1,1-DCA Cis-1,2-DCE TCE PCE	0.6 0.8 3.0 16.0	0.6 0.8 3.0 16.0	0 0 0 0
	MUNI-04	SY0166 SY0167	Water	$MeCl_2$ 1,1-DCA Cis-1,2-DCE Chloroform TCE PCE	0.2 0.9 2.0 0.2 4.0 19.0	0.2 0.9 2.0 0.2 4.0 19.0	0 0 0 0 0 0
	MUNI-21	SY0161 SY0162	Water	No analyte detected	--	--	--
Semivolatile Organic Analysis (BNAs)	MW01G	YK631 YK632	Water	No analyte detected	--	--	--
	MW02B	YK620 YK621	Water	Bis (2-ethylhexyl phthalate)	42	40	4.9
Pesticide/PCBs	MW01G	YK631 YK632	Water	No analyte detected	--	--	--
	MW02B	YK620 YK621	Water	No analyte detected	--	--	--
Total Petroleum Hydrocarbons-Diesel Total Petroleum Hydrocarbons-Gasoline	MW01G	SY215 SY216	Water	No analyte detected	--	--	--

Appendix E

Table 5 (Cont'd.)

SUMMARY OF PRECISION FOR DUPLICATE SAMPLES

Parameter	Location	Sample #	Matrix	Analyte	D_1	D_2	Precision
	MW02B	SY0201 SY0202	Water	No analyte detected	--	--	--
Total Metals(1)	MW01G	MYJ649 MYJ650	Water	Ca	84800	86200	1.6
				Fe	906	927	2.3
				Mg	15600	15800	1.3
				Mn	46.7	47.8	2.3
				Na	19100	19400	1.6
				Zn	27.2	79.1	98.*
	MW02B	MYH668 MYH669	Water	Al	464	773	50.*
				Ba	64.6	69.0	6.6
				Ca	87900	88100	0.22
				Fe	9640	10000	3.7
				Mg	17800	17900	0.56
				Mn	172	165	4.2
				Na	18600	18500	0.54
				Zn	568	562	0.71

Note: Only Result > CRDL was calculated for precision. Precision = $\frac{D_1 - D_2}{D_1 + D_2/2} \times 100$

* Analyte exceeded the acceptable criteria of 20% for precision.

$MeCl_2$ = methylene chloride
1,1-DCA = 1,1-Dichloroethane
1,2-DCE = Cis-1,2-Dichloroethene
TCE = Trichloroehene
PCE = Tetrachloroethene

Al = Aluminum
Ba = Barium
Ca = Calcium
Fe = Iron
Mg = Magnesium
Mn = Manganese
Na = Sodium
Zn = Zinc

Region IX Laboratory Data Validation Reports-
Soil Analyses

Volatile Organics
Base Neutral Acids
Pesticide/PCBs
Total Metals

160 Spear Street, Suite 1380
San Francisco, California
94105-1535

415/957-0110

URS TDMT Only TDCN: D683
Project #: 62172 Loc: 09.71 Type: 71

ICF TECHNOLOGY INCORPORATED

MEMORANDUM

DATE: May 21, 1992

SUBJECT: Review of Analytical Data

FROM: Carolyn Studeny
ESAT Senior Organic Data Reviewer
ICF Technology, Inc.

THROUGH: Jacob Silva
Environmental Scientist
Quality Assurance Management Section
Environmental Services Branch, OPM (P-3-2)

TO: Kevin Mayer
Remedial Project Manager
South Coast Groundwater Section (H-6-4)

Attached are comments resulting from Region 9 review of the following analytical data:

SITE:	Newmark
EPA SITE ID NO:	J5
CASE/SAS NO.:	LV2S38 Memo #13
SDG NO.:	YK613
LABORATORY:	Region IX, Las Vegas
ANALYSIS:	RAS Volatiles
SAMPLE NO.:	YK613 through YK617
COLLECTION DATE:	April 2, 1992
REVIEWER:	Chris Davis ESAT/ICF Technology, Inc.
TELEPHONE NUMBER:	(415) 882-3186

If there are any questions, please contact the reviewer.

Attachment

TPO: [ ]For Action [X]FYI

cc: Brenda Bettencourt
Larry Zinky - URS SAC

Data Validation Report

Case No.: LV2S38 Memo #13
Site: Newmark
Laboratory: Region IX, Las Vegas
Reviewer: Chris Davis, ESAT/ICF Technology, Inc.
Date: May 21, 1992

I. Case Summary

SAMPLE INFORMATION:

VOA Sample Numbers:	YK613 through YK617
Matrix:	Low Level Soil
Analysis:	RAS Volatiles
SOW:	3/90 (Rev. 7/91)
Collection Date:	April 2, 1992
Sample Receipt Date:	April 6, 1992
Analysis Date:	April 13, 1992

FIELD QC:

Trip Blanks (TB):	None
Field Blanks (FB):	None
Equipment Blanks (EB):	None
Background Samples (BG):	None
Field Duplicates (D1):	None

METHOD BLANKS AND ASSOCIATED SAMPLES:

VBLK1: YK613 through YK617, YK613 MS, and YK613 MSD

TABLES:

1A:	Analytical Results with Qualifications
1B:	Data Qualifiers
1C:	Tentatively Identified Compounds
2:	Sample Quantitation Limits of Target Compound List (TCL) Analytes

ADDITIONAL COMMENTS:

This report was prepared according to the EPA draft document, "National Functional Guidelines for Organic Data Review," December, 1990, 6/91 Revision.

MS - Matrix Spike; MSD - Duplicate Spike

II. Validation Summary

	VOA Acceptable	VOA Comment	BNA Acceptable	BNA Comment	PEST Acceptable	PEST Comment
HOLDING TIMES	[Y]	[A]	[ ]	[ ]	[ ]	[ ]
GC/MS TUNE/GC PERFORMANCE	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
CALIBRATIONS	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
FIELD QC	[N/A]	[ ]	[ ]	[ ]	[ ]	[ ]
LABORATORY BLANKS	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
SURROGATES	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
MATRIX SPIKE/DUPLICATES	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
INTERNAL STANDARDS	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
COMPOUND IDENTIFICATION	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
SYSTEM PERFORMANCE	[Y]	[B]	[ ]	[ ]	[ ]	[ ]

N/A = Not Applicable

III. Validity and Comments

A. The SW-846 technical holding times were not exceeded for any of the samples analyzed.

B. All of the results are considered valid and usable for all purposes. All quality control criteria have been met and are considered acceptable.

Case No.: LV2838 Memo #13
Site: Newmark
Lab.: Region IX, Las Vegas
Reviewer: Chris Davis, ESAT/ICF Technology, Inc.
Date: May 21, 1992

Analysis Type: Low Level Soil Samples for RAS Volatiles

Concentration in ug/Kg

Sample Location / Sample I.D.	YK613			YK614			YK615			YK616			YK617			Method Blank VBLK1					
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
No RAS Volatiles detected	ND			ND			ND			ND			ND			ND					
Percent Solids	96 %			92 %			94 %			87 %			84 %			100 %					

*The requested analytes were analyzed for, but "Not Detected". The Sample Quantitation Limits are listed in Table 2.

Val-Validity Refer to Data Qualifiers in Table 1B.

Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.

CRQL-Contract Required Quantitation Limits

NA-Not Analyzed, ND-Not Detected

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank

BG-Background Sample

TABLE 1B
DATA QUALIFIERS

NO QUALIFIERS indicates that the data are acceptable both qualitatively and quantitatively.

U Indicates that the compound is not detected above the concentration listed.

L Indicates results which fall below the Contract Required Quantitation Limit. Results are considered estimates and usable for limited purposes.

J Results are estimated and the data are valid for limited purposes. The results are qualitatively acceptable.

N Presumptive evidence of the presence of the material. The compound identification is considered to be tentative. The data are usable for limited purposes.

R Results are rejected and data are invalid for all purposes.

TABLE 1C
Detected Tentatively Identified Compounds (TICs)

Case No.: LV2S38 Memo #13
Site: Newmark
Laboratory: Region IX, Las Vegas
Reviewer: Chris Davis
ESAT/ICF Technology, Inc.
Date: May 21, 1992

Sample Number	Compound	Fraction	Retention Time, min.	Concentration (ug/kg)	Rating[a] (Remarks)
YK613	None Found	VOA			
YK614	None Found	VOA			
YK615	None Found	VOA			
YK616	None Found	VOA			
YK617	None Found	VOA			

J (estimated): Value is considered usable for limited purposes.
[a]Rating codes--probability that identification is correct:
A = High B = Moderate C = Low

TABLE 2
Sample Quantitation Limits

Case No.: LV2S38 Memo #13
Site: Newmark
Laboratory: Region IX, Las Vegas
Reviewer: Chris Davis
ESAT/ICF Technology, Inc.
Date: May 21, 1992

Volatile Compounds	Units, ug/L	Q	C
Chloromethane	10		
Bromomethane	10		
Vinyl chloride	10		
Chloroethane	10		
Methylene chloride	10		
Acetone	10		
Carbon disulfide	10		
1,1-Dichloroethene	10		
1,1-Dichloroethane	10		
Cis-1,2-Dichloroethene	10		
Trans-1,2-Dichloroethene	10		
Chloroform	10		
1,2-Dichloroethane	10		
2-Butanone	10		
1,1,1-Trichloroethane	10		
Carbon tetrachloride	10		
Bromodichloromethane	10		
1,1,2,2-Tetrachloroethane	10		
1,2-Dichloropropane	10		
trans-1,3-Dichloropropene	10		
Trichloroethene	10		
Dibromochloromethane	10		
1,1,2-Trichloroethane	10		
Benzene	10		
cis-1,3-Dichloropropene	10		
Bromoform	10		
2-Hexanone	10		
4-Methyl-2-pentanone	10		
Tetrachloroethene	10		
Toluene	10		
Chlorobenzene	10		
Ethylbenzene	10		
Styrene	10		
Total Xylenes	10		

Q - Qualifier
C - Comment

TABLE 2
(cont'd)

To calculate the sample quantitation limits, multiply CRQL by the following factors:

Sample No.	Volatiles
YK613	1.0
YK614	1.1
YK615	1.2
YK616	1.1
YK617	1.2
VBLK1	1.0

TPO: [ ] ACTION [X] FYI Region IX

ORGANIC REGIONAL DATA ASSESSMENT

CASE NO. LV2S38 Memo #13 LABORATORY Region 9

SDG NO. YK613 DATA USER

SOW 3/90 (Revised 7/91) REVIEW COMPLETION DATE May 21, 1992

NO. OF SAMPLES _____ WATER 5 SOIL _____ OTHER

REVIEWER [ ] ESD [X] ESAT [ ] OTHER, CONTRACT/CONTRACTOR

	VOA	BNA	PEST	OTHER
1. HOLDING TIMES	O			
2. GC-MS TUNE/GC PERFORMANCE	O			
3. INITIAL CALIBRATIONS	O			
4. CONTINUING CALIBRATIONS	O			
5. FIELD QC	F			
6. LABORATORY BLANKS	O			
7. SURROGATES	O			
8. MATRIX SPIKE/DUPLICATES	O			
9. REGIONAL QC	F			
10. INTERNAL STANDARDS	O			
11. COMPOUND IDENTIFICATION	O			
12. COMPOUND QUANTITATION	O			
13. SYSTEM PERFORMANCE	O			
14. OVERALL ASSESSMENT	O			

O - No problems or minor problems that do not affect data usability.
X - No more than about 5% of the data points are qualified as either estimated or unusable.
M - More than about 5% of the data points are qualified as estimated.
Z - More than about 5% of the data points are qualified as unusable.
F - Not applicable

TPO ACTION ITEMS: _____

AREAS OF CONCERN: _____

160 Spear Street, Suite
San Francisco, Californ
94105-1535

415/957-0110

URS TDMT Only TDCN: 0674

Project #: 62172 Loc: 09.71 Type: 71

RECEIVED

ICF TECHNOLOGY INCORPORATED

DCN # 3379 [redacted] 1992

FILE NO. 62171

CC:

PM___ DPM___ SM___ C/SCM___ FILE ✓

88

MAY 1 2 1992

MEMORANDUM

DATE: May 5, 1992

SUBJECT: Review of Analytical Data

FROM: Carolyn Studeny
ESAT Senior Organic Data Reviewer
ICF Technology, Inc.

THROUGH: Jacob Silva
Environmental Scientist
Quality Assurance Management Section
Environmental Services Branch, OPM (P-3-2)

TO: Kevin Mayer
Remedial Project Manager
South Coast Groundwater Section (H-6-4)

Attached are comments resulting from Region 9 review of the following analytical data:

SITE:	Newmark
EPA SITE ID NO:	J5
CASE/SAS NO.:	LV2S38 Memo #9
SDG NO.:	YK600
LABORATORY:	Region IX, Las Vegas
ANALYSIS:	RAS Volatiles
SAMPLE NO.:	YK600, YK602, YK603, YK609 through YK612
COLLECTION DATE:	March 12 through 26, 1992
REVIEWER:	Ian Jensen ESAT/ICF Technology, Inc.
TELEPHONE NUMBER:	(415) 882-3187

If there are any questions, please contact the reviewer.

Attachment

TPO: [ ]For Action [X]FYI

cc: Brenda Bettencourt
Larry Zinky, URS SAC

ESATQA9A-6247/ILV2S389.RPT

Data Validation Report

Case No.: LV2S38 Memo #9
Site: Newmark
Laboratory: Region IX, Las Vegas
Reviewer: Ian Jensen, ESAT/ICF Technology, Inc.
Date: May 5, 1992

I. Case Summary

SAMPLE INFORMATION:

VOA Sample Numbers:	YK600, YK602, YK603, YK609 through YK612
Concentration and Matrix:	Low Level Soil
Analysis:	RAS Volatiles
SOW:	3/90
Collection Date:	March 12 through 26, 1992
Sample Receipt Date:	March 13 through 28, 1992
Analysis Date:	March 16 through April 3, 1992

FIELD QC:

Trip Blanks (TB):	None
Field Blanks (FB):	None
Equipment Blanks (EB):	None
Background Samples (BG):	None
Field Duplicates (D1):	None

METHOD BLANKS AND ASSOCIATED SAMPLES:

VBLK1:	YK600
VBLK2:	YK602 and YK603
VBLK3:	YK609 through YK612 YK611-MS and YK611-DS

TABLES:

1A:	Analytical Results with Qualifications
1B:	Data Qualifiers
2:	Sample Quantitation Limits of Target Compound List (TCL) Analytes

ADDITIONAL COMMENTS:

No Tentatively Identified Compounds were found in any of the samples analyzed.

This report was prepared according to the EPA draft document, "National Functional Guidelines for Organic Data Review," December, 1990 (6/91 Revision).

MS - Matrix Spike; DS - Duplicate Spike

II. Validation Summary

	VOA		BNA		PEST	
	Acceptable	Comment	Acceptable	Comment	Acceptable	Comment
HOLDING TIMES	[Y]	[B]	[ ]	[ ]	[ ]	[ ]
GC/MS TUNE/GC PERFORMANCE	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
CALIBRATIONS	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
FIELD QC	[N/A]	[ ]	[ ]	[ ]	[ ]	[ ]
LABORATORY BLANKS	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
SURROGATES	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
MATRIX SPIKE/DUPLICATES	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
INTERNAL STANDARDS	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
COMPOUND IDENTIFICATION	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
COMPOUND QUANTITATION	[Y]	[A]	[ ]	[ ]	[ ]	[ ]
SYSTEM PERFORMANCE	[Y]	[C]	[ ]	[ ]	[ ]	[ ]

N/A = Not Applicable

III. Validity and Comments

A. The results reported in Table 1A for the following analytes are considered as estimates (J) and usable for limited purposes only:

- All results below the Contract Required Quantitation Limits (denoted with an "L" qualifier)

Results below the Contract Required Quantitation Limits (CRQL) are considered to be qualitatively acceptable but quantitatively unreliable due to the uncertainty in analytical precision near the limit of detection.

B. The SW-846 technical holding time was not exceeded for any of the samples analyzed.

C. All other results are considered valid and usable for all purposes. All quality control criteria have been met and are considered acceptable.

ANALYTICAL RESULTS
TABLE 1A*

Case No.: LV2538 Memo #09
Site: Newmark
Lab.: Region IX, Las Vegas
Reviewer: Ian Jensen, ESAT/ICF Technology, Inc.
Date: May 5, 1992

Analysis Type: Low Level Soil Samples for RAS Volatiles

Concentration in ug/Kg

Sample Location / Sample I.D.	YK600			YK602			YK603			YK609			YK610			YK611			YK612		
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Methylene Chloride	11 U			13 U			12 U			11 U			7 L	J	A	12 U			13 U		
1,2-Dichloroethane	11 U			13 U			12 U			11 U			11 U			2 L	J	A	13 U		
Percent Solids	96 %			84 %			87 %			86 %			86 %			86 %			84 %		

Sample Location / Sample I.D.	Method Blank VBLK1			Method Blank VBLK2			Method Blank VBLK3			CRQL											
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Methylene Chloride	10 U			10 U			10 U			10											
1,2-Dichloroethane	10 U			10 U			10 U			10											

*The other requested analytes were analyzed for, but "Not Detected". The Sample Quantitation Limits are listed in Table 2.
Val-Validity Refer to Data Qualifiers in Table 1B.
Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.
CRQL-Contract Required Quantitation Limits
NA-Not Analyzed

D1, D2, etc.-Field Duplicate Pairs
FB-Field Blank, EB-Equipment Blank, TB-Travel Blank
BG-Background Sample

TABLE 1B
DATA QUALIFIERS

NO QUALIFIERS indicates that the data are acceptable both qualitatively and quantitatively.

U Indicates that the compound is not detected above the concentration listed.

L Indicates results which fall below the Contract Required Quantitation Limit. Results are considered estimates and usable for limited purposes.

J Results are estimated and the data are valid for limited purposes. The results are qualitatively acceptable.

N Presumptive evidence of the presence of the material. The compound identification is considered to be tentative. The data are usable for limited purposes.

R Results are rejected and data are invalid for all purposes.

TABLE 2
Sample Quantitation Limits

Case No.: LV2S38 Memo #9
Site: Newmark
Laboratory: Region IX, Las Vegas
Reviewer: Ian Jensen
ESAT/ICF Technology, Inc.
Date: May 5, 1992

Volatile Compounds	Units, ug/Kg	Q	C
Chloromethane	10		
Bromomethane	10		
Vinyl chloride	10		
Chloroethane	10		
Methylene chloride	10		
Acetone	10		
Carbon disulfide	10		
1,1-Dichloroethene	10		
1,1-Dichloroethane	10		
1,2-Dichloroethene (total)	10		
Chloroform	10		
1,2-Dichloroethane	10		
2-Butanone	10		
1,1,1-Trichloroethane	10		
Carbon tetrachloride	10		
Bromodichloromethane	10		
1,2-Dichloropropane	10		
1,1,2,2-Tetrachloroethane	10		
trans-1,3-Dichloropropene	10		
Trichloroethene	10		
Dibromochloromethane	10		
1,1,2-Trichloroethane	10		
Benzene	10		
cis-1,3-Dichloropropene	10		
Bromoform	10		
2-Hexanone	10		
4-Methyl-2-pentanone	10		
Tetrachloroethene	10		
Toluene	10		
Chlorobenzene	10		
Ethylbenzene	10		
Styrene	10		
Total Xylenes	10		

Q - Qualifier
C - Comment

TABLE 2
(cont'd)

To calculate the sample quantitation limits, multiply CRQL by the following factors:

Sample No.	Volatiles
YK600	1.11
YK602	1.27
YK603	1.20
YK609	1.14
YK610	1.12
YK611	1.16
YK612	1.27
Method Blanks	1.00

TPO: [ ] ACTION [X] FYI Region IX

ORGANIC REGIONAL DATA ASSESSMENT

CASE NO. LV2S38 Memo #9 LABORATORY Region IX, Las Vegas

SDG NO. YK600 DATA USER _____

SOW 3/90 REVIEW COMPLETION DATE May 5, 1992

NO. OF SAMPLES _____ WATER 7 SOIL _____ OTHER

REVIEWER [ ] ESD [X] ESAT [ ] OTHER, CONTRACT/CONTRACTOR _____

	VOA	BNA	PEST	OTHER
1. HOLDING TIMES	O			
2. GC-MS TUNE/GC PERFORMANCE	O			
3. INITIAL CALIBRATIONS	O			
4. CONTINUING CALIBRATIONS	O			
5. FIELD QC ("F" = not applicable)	F			
6. LABORATORY BLANKS	O			
7. SURROGATES	O			
8. MATRIX SPIKE/DUPLICATES	O			
9. REGIONAL QC ("F" = not applicable)	F			
10. INTERNAL STANDARDS	O			
11. COMPOUND IDENTIFICATION	O			
12. COMPOUND QUANTITATION	O			
13. SYSTEM PERFORMANCE	O			
14. OVERALL ASSESSMENT	O			

O = No problems or minor problems that do not affect data usability.
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as estimated.
Z = More than about 5% of the data points are qualified as unusable.

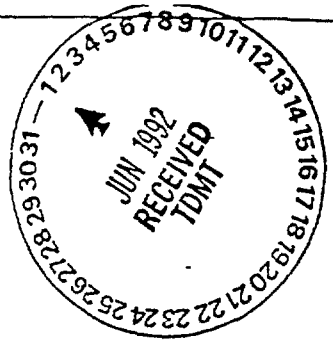
TPO ACTION ITEMS: _____

AREAS OF CONCERN: _____

160 Spear Street, Suite 1380
San Francisco, California
94105-1535

415/957-0110

URS TDMT Only TDCN: 0690
Project #: 62172 Loc: 09.71 Type: 71



ICF TECHNOLOGY INCORPORATED

MEMORANDUM

DATE: April 17, 1992

SUBJECT: Review of Analytical Data

FROM: Carolyn Studeny
ESAT Senior Organic Data Reviewer
ICF Technology, Inc.

THROUGH: Jacob Silva
Environmental Scientist
Quality Assurance Management Section
Environmental Services Branch, OPM (P-3-2)

TO: Kevin Mayer
Remedial Project Manager
South Coast Groundwater Section (H-6-4)

Attached are comments resulting from Region 9 review of the following analytical data:

SITE:	Newmark
EPA SITE ID NO:	J5
CASE/SAS NO.:	LV2S38 Memo #01
SDG NO.:	YK595
LABORATORY:	Region IX, Las Vegas
ANALYSIS:	RAS Volatiles
SAMPLE NO.:	YK595, YK596, YK597 and YK598
COLLECTION DATE:	February 26, 27, March 6 and 7, 1992
REVIEWER:	Barbara Gordon ESAT/ICF Technology, Inc.
TELEPHONE NUMBER:	(415) 882-3051

If there are any questions, please contact the reviewer.

Attachment

SYMBOL					
SURNAME					
DATE					

U.S. EPA CONCURRENCES OFFICIAL FILE COPY

160 Spear Street, Suite 1380
San Francisco, California
94105-1535

415/957-0110

ICF TECHNOLOGY INCORPORATED

MEMORANDUM

DATE: April 17, 1992

SUBJECT: Review of Analytical Data

FROM: Carolyn Studeny
ESAT Senior Organic Data Reviewer
ICF Technology, Inc.

THROUGH: Jacob Silva
Environmental Scientist
Quality Assurance Management Section
Environmental Services Branch, OPM (P-3-2)

TO: Kevin Mayer
Remedial Project Manager
South Coast Groundwater Section (H-6-4)

Attached are comments resulting from Region 9 review of the following analytical data:

SITE:	Newmark
EPA SITE ID NO:	J5
CASE/SAS NO.:	LV2S38 Memo #01
SDG NO.:	YK595
LABORATORY:	Region IX, Las Vegas
ANALYSIS:	RAS Volatiles
SAMPLE NO.:	YK595, YK596, YK597 and YK598
COLLECTION DATE:	February 26, 27, March 6 and 7, 1992
REVIEWER:	Barbara Gordon ESAT/ICF Technology, Inc.
TELEPHONE NUMBER:	(415) 882-3051

If there are any questions, please contact the reviewer.

Attachment

TPO: [ ]For Action [X]FYI

cc: Brenda Bettencourt
Larry Zinky - URS SAC

Data Validation Report

Case No.: LV2S38 Memo #01
Site: Newmark
Laboratory: Region IX, Las Vegas
Reviewer: Barbara Gordon, ESAT/ICF Technology, Inc.
Date: April 17, 1992

I. Case Summary

SAMPLE INFORMATION:

VOA Sample Numbers:	YK595, YK596, YK597 and YK598
Concentration and Matrix:	4 Low Concentration Soil Samples
Analysis:	RAS Volatiles
SOW:	3/90 (Revision 7/91)
Collection Date:	February 26, 27, March 6 and 7, 1992
Sample Receipt Date:	February 28 and March 10, 1992
Analysis Date:	March 2 and 13, 1992

FIELD QC:

Trip Blanks (TB):	None
Field Blanks (FB):	None
Equipment Blanks (EB):	None
Background Samples (BG):	None
Field Duplicates (D1):	None

METHOD BLANKS AND ASSOCIATED SAMPLES:

VBLK1:	YK595, and YK596
VBLK2:	YK597, YK598, YK598MS and YK598DS

TABLES:

1A:	Analytical Results with Qualifications
1B:	Data Qualifiers
2:	Sample Quantitation Limits of Target Compound List (TCL) Analytes

ADDITIONAL COMMENTS:

No Tentatively Identified Compounds were detected in any of the samples. This report was prepared according to the EPA draft document, "National Functional Guidelines for Organic Data Review," December, 1990 (Revision 6/91).

II. Validation Summary

	VOA		BNA		PEST	
	Acceptable	Comment	Acceptable	Comment	Acceptable	Comment
HOLDING TIMES	[Y]	[B]	[ ]	[ ]	[ ]	[ ]
GC/MS TUNE/GC PERFORMANCE	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
CALIBRATIONS	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
FIELD QC	[N/A]	[ ]	[ ]	[ ]	[ ]	[ ]
LABORATORY BLANKS	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
SURROGATES	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
MATRIX SPIKE/DUPLICATES	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
INTERNAL STANDARDS	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
COMPOUND IDENTIFICATION	[Y]	[ ]	[ ]	[ ]	[ ]	[ ]
COMPOUND QUANTITATION	[Y]	[A]	[ ]	[ ]	[ ]	[ ]
SYSTEM PERFORMANCE	[Y]	[C]	[ ]	[ ]	[ ]	[ ]

N/A = Not Applicable

III. Validity and Comments

A. The result reported in Table 1A for the following analyte is considered as an estimate (J) and usable for limited purposes only:

- Methylene chloride in sample number YK597 (denoted with an "L" qualifier)

Results below the Contract Required Quantitation Limits (CRQL) are considered to be qualitatively acceptable but quantitatively unreliable due to the uncertainty in analytical precision near the limit of detection.

B. The SW-846 technical holding time was not exceeded for any of the samples analyzed.

C. All other results are considered valid and usable for all purposes. All quality control criteria have been met and are considered acceptable.

ANALYTICAL RESULTS
TABLE 1A*

Case No.: LV2838 Memo #01
Site: Newmark
Lab.: Region IX, Las Vegas
Reviewer: Barbara Gordon, ESAT/ICF Technology, Inc.
Date: April 17, 1992

Analysis Type: Low Level Soil Samples for RAS Volatiles

Concentration in ug/Kg

Sample Location / Sample I.D.	YK595			YK596			YK597			YK598			Method Blank VBLK1			Method Blank VBLK2			CRQL		
Compound - Volatiles	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Methylene chloride	15 U			12 U			3 L	J	A	12 U			10 U			10 U			10		
Acetone	15 U			12 U			18			12 U			10 U			10 U			10		
Percent Solids	70 %			80 %			87 %			82 %			—			—			—		

*The other requested analytes were analyzed for, but "Not Detected". The Sample Quantitation Limits are listed in Table 2.

Val-Validity Refer to Data Qualifiers in Table 1B.

Com.-Comments Refer to the Corresponding Section in the Narrative for each letter.

CRQL-Contract Required Quantitation Limits

NA-Not Analyzed

D1, D2, etc.-Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Travel Blank

BG-Background Sample